

## REMARKS

The above Amendments and these Remarks are in reply to the Office Action mailed October 16, 2008.

Claims 1-21 were pending in the Application prior to the outstanding Office Action. Claims 22 - 25 are added. Claims 22 and 23 are supported in the specification as filed at least at paragraphs [0007], [0027], [0045], and the additional limitations introduced in Claims 24 - 25 are supported in the specification as filed at least at paragraphs [0043], [0044], [0053]

Claims 1-25 remain for the Examiner's consideration. Reconsideration and withdrawal of the rejections are respectfully requested.

The sections are numbered 3, 5, 6, 7 and 8 in order to correspond with the Examiner's numbering in the October 16, 2008, Office Action.

## CLAIM REJECTIONS UNDER 35 U.S.C. § 102

3. Claims 1, 10 and 12 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by *Jun* et al., U.S. Publication No. US 2001/0020981 (hereinafter *Jun*).

### Claim 1

#### Dominant Group

Claim 1 includes the limitation 'determining a dominant group in each of a plurality of video segments'. The Examiner directs the Applicant to *Jun*, paragraphs [0023]-[0024], Office Action, October 16, 2008, page 2, second last line. The relevant sections of *Jun* are included:

“To accomplish the objects of the present invention, there is provided a method of generating a synthetic key frame, comprising the steps of: receiving a video stream from a first source and dividing it into meaningful sections; selecting key frame(s) or key region(s) representative of a divided section; and combining the selected key frame(s) or key region(s), to generate one synthetic key frame” *Jun, paragraph [0023]*.

“To accomplish the objects of the present invention, there is provided a method of describing synthetic key frame data, comprising the steps of: dividing a video stream into meaningful sections, and synthesizing a key frame or key region representing the content of each section into one image to generate a synthetic key frame; and describing a list of key frame/key region included in constituent elements of the synthetic key frame” *Jun, paragraph [0024]*.

The Examiner states that “key regions represent the entire contents of the scene” *Office Action, October 16, 2008, page 3, lines 3-4*. Thus, *Jun*’s ‘key region’ is the equivalent of the Applicant’s video segment. The Examiner does not explain where *Jun* discloses determining a dominant group. Accordingly, *Jun* does not disclose determining a dominant group in each of a plurality of video segments. Thus, Claim 1 is not anticipated by *Jun*.

### Key Frame

Claim 1 includes the limitation ‘determining a key frame in each of the video segments’. The Examiner directs the Applicant to *Jun, paragraphs [0023]-[0024], Office Action, October 16, 2008, page 2, last line*. According to the Examiner *Jun*’s ‘key region’ is the equivalent of the Applicant’s video segment. If the Examiner interprets ‘key frame’ as dominant group, then *Jun* does not disclose determining a key frame in

each of the video segments. Accordingly, *Jun* does not disclose determining a key frame in each of the video segments. Thus, Claim 1 is not anticipated by *Jun*.

### Video Segment less Germ defines Support

Claim 1 includes the limitation ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’.

#### (i) Explicit disclosure

The Examiner states:

defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments (*Jun*: paragraph [0051], figure 13b, [0074-0075], region of interest is read as “a germ”, key regions represent the entire contents of the scene and the area around the key region is considered “a support”);

Office Action, October 16, 2008, page 3, lines 1-5. The Examiner directs the Applicant to paragraphs [0051], [0074] and [0075] in *Jun*, reproduced below. Office Action, October 16, 2008, point 3.

“The synthetic key frame of the invention, different from the key frame in the prior art, is not a frame which has been physically generated in the video stream because it is created by combining regions having meaningful information or key frames in order to represent a specific segment in the video stream” *Jun, paragraph [0051]*.

“FIG. 13A illustrates a synthetic key frame Fsk generated from one scene constructed of nine shots whose running time is sixty-five seconds, and FIG. 13B

illustrates a synthetic key frame Fsk generated from one scene constructed of nine shots whose running time is fifty-three seconds” Jun, paragraph [0074].

“Though the shots included in one scene have different contents, the synthetic key frame Fsk according to the present invention can present an image combining key frames or key regions representing the entire contents of the scene without selecting a key frame representing a scene. Therefore, the synthetic key frame Fsk can summarize the entire contents of the scene” Jun, paragraph [0075].

The Applicant respectfully submits that neither these paragraphs nor elsewhere in *Jun* is there an explicit disclosure of the limitation ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’.

## (ii) Implicit Disclosure

The Examiner also directs the Applicant to figure 13b in Jun Office Action, October 16, 2008, point 3. Figure 13b has a headline “9 shorts and 53 sec” above a double arrowed horizontal line, four (4) boxes with images below the horizontal line each of equal dimension spaced horizontally, which will be referred to hereinafter as Ia, Ib, Ic and Id from left to right (L to R). Arrows from each of Ia, Ib, Ic and Id point to a box labeled ‘Fsk’, positioned below the four pictures. Within the ‘Fsk’ box are six (6) boxes Ga, Gb, Gc, Gd, Ge and Gf, where Ga and Gb are at the top (L to R), Gc and Gd are in the middle (L to R) and Ge and Gf are on the bottom (L to R). Each of Ga, Gb, Gc, Gd, Ge and Gf depicts one or more portions of Ia, Ib, Ic or Id, where, Ga depicts a portion of Ia, Gb depicts a portion of Ib, Gc depicts a portion of Ic, Gd depicts a portion of Ic, Ge depicts a portion of Id and Gf depicts a portion of Ic.

The Examiner states that the area around each key region is “the support” Office Action, October 16, 2008, page 3, lines 4-5. The Applicant respectfully submits that the Examiner’s interpretation of *Jun* does not define a support consistent with the limitations of Claim 1. Claim 1 requires ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’. In contrast, the Examiner’s interpretation of *Jun* produced three germs from a video segment (Ic produces Gc, Gd and Gf). If Ga, Gb, Gc, Gd, Ge and Gf are germs then Ic defines three germs not a germ. As a result, the limitation defining a germ is not met. If in the alternative, the Examiner’s argues that Ga, Gb, Gc, Gd, Ge and Gf are not germs then *Jun* does not even implicitly disclose ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’, since there would be nothing to suggest a germ was separated from a support.

The Applicant’s definition of a support does not allow that the support contain a germ. This can easily be understood, since to allow a support to contain another germ could introduce that germ twice into the visual summary, once as a germ and again as a part of a support. This could result in a confused image, not a condensed visual summary. Thus, the limitations of claim 1, including ‘wherein the video segment less the germ defines a support in each of the video segments’ can only be met if there is a one to one correspondence between germs and video segments. In *Jun*, if Ga, Gb, Gc, Gd, Ge and Gf are germs, then there is not a one to one correspondence between germs and video segments (i.e., in *Jun* there are more than one germ taken from the same video segment).

Thus, *Jun* does not define a support in each of the video segments as per the Applicant’s invention. Accordingly, Claim 1 is not anticipated by *Jun*.

### Filling in the space

#### (iii) Explicit Disclosure

Claim 1 also includes the limitation ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’.

The Examiner states:

filling in the space of the canvas between the germs, wherein filling the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated, wherein the canvas generated is a highly condensed visual summary of the plurality of video segments (Jun: figures: 13a, 13b, 17, paragraphs [0074]-[0076], Examiner notes that it can be seen in figure 13a, for example, that the germ is a region of interest, and the claim limitation filling in the space of the canvas between the germs only brings in the limitation of occupying the canvas with any additional image that is not part of the region of interest, which can be seen in figure 13a in the Fsk. The region of interest “germ” can be the head of the person; and any other background imagery that is not part

of the region of interest which is seen in the figure will meet the limitation of the claim.

Furthermore, the limitation where one or more portions of the supports are positioned in the space is inherent when the regions of interest are entered into the synthetic key frame. This is due to the fact that each region of interest has a support that is by default closest to the region of interest or "germ". Also, the synthetic key frame Fsk can summarize the entire contents of the scene).

Office Action, October 16, 2008, page 3, line 12 – page 4, line 6.

The Examiner directs the Applicant to paragraphs [0051], [0074], [0075] and figure 13b in *Jun* (see above). These sections do not explicitly disclose 'filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated'.

(iv) Implicit Disclosure

The Examiner also directs the Applicant to figure 13a in *Jun*. Figure 13a has a headline "9 shorts and 65 sec" above a double arrowed horizontal line, four (4) boxes with images below the horizontal line each of equal dimension spaced horizontally, which will be referred to as Ia, Ib, Ic and Id from left to right (L to R). Arrows from each of Ia, Ib, Ic and Id point to a box labeled 'Fsk', positioned below Ia, Ib, Ic and Id. Within the 'Fsk' box are five (5) boxes Ga, Gb, Gc, Gd and Ge, where Ga and Gb are at the top (L to R), Gc and Gd are in the middle (L to R) and Ge is on the bottom. Each of Ga, Gb, Gc, Gd and Ge depicts one or more portions of the images of Ia, Ib, Ic or Id, where, Ga

depicts a portion of Ia, Gb depicts a portion of Ib, Gc depicts a portion of Ic, Gd depicts a portion of Id and Ge depicts a portion of Ic.

The Examiner states that “it can be seen in figure 13a, for example, that the germ is a region of interest, and the claim limitation filling in the space of the canvas between the germs only brings in the limitation of occupying the canvas with any additional image that is not part of the region of interest, which can be seen in figure 13a in the Fsk. The region of interest “germ” can be the head of the person; and any other background imagery that is not part of the region of interest which is seen in the figure will meet the limitation of the claim”. Office Action, October 16, 2008, page 3, line 18 - page 4, line 1.

The Applicant understands that in Figures 13a Gc in the Fsk box is a ‘head shot’. The Examiner points to background imagery from the head shot present in the Fsk box as the support. However, the Examiner’s interpretation of *Jun* does not fill the space consistent with the Applicant’s invention. The Applicant’s limitation requires ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’. The Examiner’s interpretation of *Jun* does not disclose all the limitations of Claim 1. This can be shown by considering the two alternatives (A) where Ga, Gb, Gc, Gd and Ge are not germs and (B) where Ga, Gb, Gc, Gd and Ge are germs.

(A) Ga, Gb, Gc, Gd and Ge are not germs

If the Examiner means that Ga, Gb, Gc, Gd and Ge are not germs then it follows that Ga, Gb, Gc, Gd and Ge are the germs and the support. Then *Jun* does not implicitly disclose defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments.

(B) Ga, Gb, Gc, Gd and Ge are germs

If the Examiner means that Ga, Gb, Gc, Gd and Ge are the germs, then the Applicant respectfully points out that in Figure 13a there is no background imagery that is added back in the Fsk box that meets the limitation ‘at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’ since only Ga, Gb, Gc, Gd and Ge are present in Fsk.

The Examiner claims that it is ‘inherent’ that portions of the support are positioned in the space Office Action, October 16, 2008, page 3, line 12 – page 4, line 3. The Applicant respectfully disagrees. “The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic .... Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient .... In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art ...” MPEP 2112. Thus, the limitation cannot be met inherently because in at least the

example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

Accordingly, either Ga, Gb, Gc, Gd and Ge are germs and supports, in which case the germs have not been defined as per the ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’ (see 1 above). Alternatively, if Ga, Gb, Gc, Gd and Ge are only the germs then the ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’ limitation cannot be met inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

The Applicant respectfully submits that this response deals with the alternative definitions of what is present in the Fsk boxes in Figures 13a and 13b because the *Jun* application does not explicitly disclose any of the claim limitations. Only by carrying out ‘thought’ experiments can the Examiner implicitly find some but not all of the limitations of the Applicant’s invention. Finally, the Applicant respectfully reminds the Examiner that the art cited by the Examiner “must contain an enabling disclosure” MPEP 2131.01. The Applicant notes that the abandoned *Jun* application does not enable either the ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’ or the ‘filling in the space of the canvas between the germs, wherein filling in the space

of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated' limitations.

*Jun* does not explicitly or implicitly disclose the 'defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments' or the 'filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated' limitations. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described ...The identical invention must be shown in as complete detail as is contained in the ... claim." MPEP 2131. Accordingly, Claim 1 is not anticipated by *Jun*.

## **Claim 10**

### Video Segment less Germ defines Support

Claim 10 includes the limitation 'determining a germ in each of a plurality of images, the germ containing a region of interest, wherein the video region less the germ defines a support in each of the video regions'.

(i) Explicit disclosure

The Applicant respectfully submits that *Jun* does not explicitly disclose a support as defined in Claim 10, i.e., wherein the video region less the germ defines a support in each of the video regions.

(ii) Implicit Disclosure

The Examiner states that the area around each key region is “the support” Office Action, October 16, 2008, page 3, lines 4-5. However, the Examiner’s interpretation of *Jun* does not define a support consistent with the Applicant’s invention. The Applicant’s limitation requires ‘determining a germ in each of a plurality of images, the germ containing a region of interest, wherein the video region less the germ defines a support in each of the video regions’. The Examiner’s interpretation of *Jun* has a support that is not equivalent to the video region less the germ. This can be shown by considering the two alternatives (A) where Ga, Gb, Gc, Gd, Ge and Gf are not germs and (B) where Ga, Gb, Gc, Gd, Ge and Gf are germs.

(A) Ga, Gb, Gc, Gd, Ge and Gf are not germs

If Ga, Gb, Gc, Gd, Ge and Gf are not germs then it follows that they Ga, Gb, Gc, Gd, Ge and Gf are the germs and the support. Then *Jun* does not implicitly disclose ‘determining a germ in each of a plurality of images, the germ containing a region of interest, wherein the video region less the germ defines a support in each of the video regions’.

### (B) Ga, Gb, Gc, Gd, Ge and Gf are germs

If Ga, Gb, Gc, Gd, Ge and Gf are germs then it follows from equations (9) and (10) above that a support (Sf) includes germs (Gc or Gd). However, the Applicant's definition does not allow that the support contain a germ, not even another germ. This can easily be understood, since to allow a support to contain another germ could introduce that germ into the visual summary as a germ and again partially as a support. This would result in a confused image, not a condensed visual summary. Thus, the limitations of claim 1, including 'wherein the video segment less the germ defines a support in each of the video segments' can only be met if there is a one to one correspondence between germs and video segments. In *Jun*, if Ga, Gb, Gc, Gd, Ge and Gf are germs, then there is not a one to one correspondence between germs and video segments (i.e., in *Jun* there are more than one germ taken from the same video segment).

Thus, *Jun* does not define a support in each of the video segments as per the Applicant's invention. Accordingly, Claim 10 is not anticipated by *Jun*.

### Filling in the space

Claim 10 also includes the limitation 'filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ'.

### (iii) Explicit Disclosure

The Applicant respectfully submits that *Jun* does not explicitly disclose filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ.

#### (iv) Implicit Disclosure

The Examiner directs the Applicant to figure 13a in *Jun.* Figure 13a has a box labeled ‘Fsk’, positioned below Ia, Ib, Ic and Id. Within the ‘Fsk’ box are five (5) boxes Ga, Gb, Gc, Gd and Ge, where Ga and Gb are at the top (L to R), Gc and Gd are in the middle (L to R) and Ge is on the bottom. Each of Ga, Gb, Gc, Gd and Ge depicts one or more portions of the images of Ia, Ib, Ic or Id, where, Ga depicts a portion of Ia, Gb depicts a portion of Ib, Gc depicts a portion of Ic, Gd depicts a portion of Id and Ge depicts a portion of Ic.

The Examiner states that “it can be seen in figure 13a, for example, that the germ is a region of interest, and the claim limitation filling in the space of the canvas between the germs only brings in the limitation of occupying the canvas with any additional image that is not part of the region of interest, which can be seen in figure 13a in the Fsk. The region of interest “germ” can be the head of the person; and any other background imagery that is not part of the region of interest which is seen in the figure will meet the limitation of the claim”. Office Action, October 16, 2008, page 3, line 18 - page 4, line 1.

The Applicant understands that in Figures 13a Gc in the Fsk box is a ‘head shot’. The Examiner points to background imagery from the head shot present in the Fsk box as the support. Consider two alternatives (A) where Ga, Gb, Gc, Gd and Ge are not germs and (B) where Ga, Gb, Gc, Gd and Ge are germs.

Either Ga, Gb, Gc, Gd and Ge are not germs but rather Ga, Gb, Gc, Gd and Ge are germs and supports. In this case the germs have not been defined as per the ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’ (see above).

Alternatively, if  $G_a$ ,  $G_b$ ,  $G_c$ ,  $G_d$  and  $G_e$  are the germs then the ‘filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ’ limitation cannot be met inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space. Accordingly, Claim 10 is not anticipated by *Jun*.

Claims 12 directly depends from independent Claim 10, and is therefore believed patentable for at least the same reasons as independent Claim 10 and because of the additional limitations of this claim.

In view of the above, Applicants respectfully request that the Examiner reconsider and withdraw the 102(b) rejections.

### **CLAIM REJECTIONS UNDER 35 U.S.C. § 103**

5. Claims 2-6, 13-15 and 20 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Jun*, in view of Uchihashi et al., ACM Multimedia: “Video Manga: Generating Semantically Meaningful Video Summaries” (hereinafter *Uchihashi*).

### **Claim 1**

#### Video Segment less Germ defines Support

Claim 1 includes the limitation ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’.

Figure 13b has a headline “9 shorts and 53 sec” above a double arrowed horizontal line, four (4) boxes with images below the horizontal line each of equal dimension spaced horizontally, which will be referred to hereinafter as Ia, Ib, Ic and Id from left to right (L to R). Arrows from each of Ia, Ib, Ic and Id point to a box labeled ‘Fsk’, positioned below the four pictures. Within the ‘Fsk’ box are six (6) boxes Ga, Gb, Gc, Gd, Ge and Gf, where Ga and Gb are at the top (L to R), Gc and Gd are in the middle (L to R) and Ge and Gf are on the bottom (L to R). Each of Ga, Gb, Gc, Gd, Ge and Gf depicts one or more portions of Ia, Ib, Ic or Id, where, Ga depicts a portion of Ia, Gb depicts a portion of Ib, Gc depicts a portion of Ic, Gd depicts a portion of Ic, Ge depicts a portion of Id and Gf depicts a portion of Ic. According to the Applicant’s definition, supports Sa, Sb, Sc, Sd, Se or Sf would be the germs less the images.

Because Gc, Gd and Gf all contain a portion of Ic, the supports Sc, Sd, and Sf would all include a portion of a germ (Sc includes the portion of Ic in Sd and Sf; Sd includes the portion of Ic in Sc and Sf and Sf includes the portion of Ic in Sc and Sd). However, the Applicant’s limitation requires that the video segment less the germ defines a support. Thus, neither *Jun* nor *Uchihashi* teach or suggest a support in each of the video segments.

#### Filling in the space

Claim 1 also includes the limitation ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the

closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’.

The Applicant believes there are two mutually exclusive alternatives where Ga, Gb, Gc, Gd and Ge are not germs and where Ga, Gb, Gc, Gd and Ge are germs. If the Examiner means that Ga, Gb, Gc, Gd and Ge are the germs and the support, then *Jun* does not implicitly disclose defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments.

If the Examiner means that Ga, Gb, Gc, Gd and Ge are the germs, then the Applicant respectfully points out that in Figure 13a there is no background imagery that is added back in the Fsk box that meets the limitation ‘at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’ since only Ga, Gb, Gc, Gd and Ge are present in Fsk.

The Examiner claims that it is ‘inherent’ that portions of the support are positioned in the space Office Action, October 16, 2008, page 3, line 12 – page 4, line 3. The Applicant respectfully disagrees. “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art ...” MPEP 2112. The ‘filling in the space of the canvas’ limitation cannot be met inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

The Applicant reminds the Examiner that it is the invention as a whole which must be analyzed for obviousness MPEP 2141.02. Further, the Examiner would be using

impermissible hindsight bias to separate out the limitations and propose that the ‘head shot’ (Gc) was a germ in one context in order to show an implicit suggestion or teaching of separating the germ from the support and then at another juncture propose that Gc was a germ and a support in order to show inherent filling of the background.

Accordingly, either Gc is a germ and a support, and the germs have not been defined as per the ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’ limitation. Alternatively, if Gc is a germ the ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’ limitation cannot be met inherently because in at least the examples shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

Since neither *Jun* nor *Uchihashi* teach or suggest these limitations, they do not teach or suggest all limitations of Claim 1. MPEP 2143.03. As such, Claim 1 was not obvious at the time the invention was made.

## **Claim 2**

Claim 2 includes the limitation “determining a group within each of the plurality of video segments having the largest 3-D volume”. The Examiner states that “Uchihashi teaches determining a group within each of the plurality of video segments having the

largest 3D-volume (Uchihashi: section 4.2, length of segment is scored)”. Office Action, October 16, 2008, page 6, line 8.

The Applicants have defined ‘3-D volume’ in the specification as filed. “Applicants need not confine themselves to the terminology used in the prior art, but are required to make clear and precise the terms that are used to define the invention whereby the metes and bounds of the claimed invention can be ascertained”. MPEP 2173.05(a). The Examiner is directed to the sentences “[a] video can be regarded as a three dimensional volume in x-y-t space” and “[a] region may be characterized as a subset three dimensional region within the x-y-z space of the three dimensional video segment 410” in paragraph [0032] and elsewhere in the specification for the definition of ‘3-D volume’. Since, *Uchihashi* does not teach or suggest a ‘3-D volume’, as defined by Applicant, it does not teach or suggest all limitations of amended Claim 2.

Further, *Uchihashi* does not project the dominant group onto the key frame, but rather scales the key frames to different sizes based on their importance score, the ‘full’ key frame is always used. There is no notion of a dominant group or projections. Since, *Uchihashi* does not teach or suggest “determining a group within each of the plurality of video segments” it does not teach or suggest all limitations of amended Claim 2.

## **Claim 10**

### Video Segment less Germ defines Support

Claim 10 includes the limitation ‘determining a germ in each of a plurality of images, the germ containing a region of interest, wherein the video region less the germ defines a support in each of the video regions’.

At least one of the supports Sa, Sb, Sc, Sd, Se or Sf constructed according to the Examiner's interpretation of figure 13b of *Jun* would include a germ. However, the Applicant's limitation requires that the video region less the germ defines a support. Thus, neither *Jun* nor *Uchihashi* teach or suggest a support in each of the video regions.

### Filling in the space

Claim 10 also includes the limitation 'filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ'.

The Examiner directs the Applicant to Figure 13a where in the Fsk box there is a 'head shot' (Gc). The Examiner points to background imagery from the head shot present in the Fsk box as the teaching or suggestion for filling. Consider two alternatives where Ga, Gb, Gc, Gd and Ge are not germs or where Ga, Gb, Gc, Gd and Ge are germs.

Either Ga, Gb, Gc, Gd and Ge are germs and supports, in which case the germs have not been defined as per the 'defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments' limitation. Alternatively, if Ga, Gb, Gc, Gd and Ge are the germs then the 'filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ' limitation cannot be taught or suggested inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space. Thus, neither *Jun* nor *Uchihashi* teach or suggest a support in each of the video segments.

Since neither *Jun* nor *Uchihashi* teach or suggest these limitations, they do not teach or suggest all limitations of Claim 10. MPEP 2143.03. As such, Claim 10 was not obvious at the time the invention was made.

Claims 2-6, 13-15 and 20 all directly or indirectly depend from independent Claims 1 and 10, and are therefore believed patentable for at least the same reasons as independent Claims 1 and 10 and because of the additional limitations of these claims.

**6.** Claims 7-9 and 16-18 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Jun*, in view of Hirata U.S. Patent No. US 6,922,485 (hereinafter *Hirata*).

## **Claim 1**

Claim 1 includes the limitation ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’.

At least one of the supports Sa, Sb, Sc, Sd, Se or Sf constructed according to the Examiner’s interpretation of figure 13b of *Jun* would include a germ. However, the Applicant’s limitation requires that the video segment less the germ defines a support. Thus, neither *Jun* nor *Hirata* teach or suggest a support in each of the video segments.

Claim 1 also includes the limitation ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports

are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated'.

The Applicant believes there are two mutually exclusive alternatives where Ga, Gb, Gc, Gd and Ge are not germs and where Ga, Gb, Gc, Gd and Ge are germs. If the Examiner means that Ga, Gb, Gc, Gd and Ge are the germs and the support, then *Jun* does not implicitly disclose defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments.

If the Examiner means that Ga, Gb, Gc, Gd and Ge are the germs, then the Applicant respectfully points out that in Figure 13a there is no background imagery that is added back in the Fsk box that meets the limitation 'at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated' since only Ga, Gb, Gc, Gd and Ge are present in Fsk.

The Examiner claims that it is 'inherent' that portions of the support are positioned in the space Office Action, October 16, 2008, page 3, line 12 – page 4, line 3. The Applicant respectfully disagrees. "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art ..." MPEP 2112. The 'filling in the space of the canvas' limitation cannot be met inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

The Applicant reminds the Examiner that it is the invention as a whole which must be analyzed for obviousness MPEP 2141.02. Further, the Examiner would be using impermissible hindsight bias to separate out the limitations and propose that the ‘head shot’ (Gc) was a germ in one context in order to show an implicit suggestion or teaching of separating the germ from the support and then at another juncture propose that Gc was a germ and a support in order to show inherent filling of the background.

Accordingly, either Gc is a germ and a support, and the germs have not been defined as per the ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’ limitation. Alternatively, if Gc is a germ the ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’ limitation cannot be met inherently because in at least the examples shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

Since neither *Jun* nor *Hirata* teach or suggest these limitations, they do not teach or suggest all limitations of Claim 1. MPEP 2143.03. As such, Claim 1 was not obvious at the time the invention was made.

## **Claim 9**

Claim 9 includes the limitation “wherein the point is assigned a background value if no support includes the point”. The Examiner argues that this limitation is also taught

*Hirata* at column 8, lines 62-67 – column 9, lines 1-14. Applicants respectfully disagree. *Hirata* constructs a segmentation matrix, but this does not allow the point to be assigned to a single “background value” if no support includes the point. Since neither *Jun* nor *Hirata* teach or suggest “assigning the pixel to a background value”, they do not teach or suggest all limitations of Claim 9. As such, Claim 9 was not obvious at the time the invention was made.

## **Claim 10**

### Video Segment less Germ defines Support

Claim 10 includes the limitation ‘determining a germ in each of a plurality of images, the germ containing a region of interest, wherein the video region less the germ defines a support in each of the video regions’.

At least one of the supports Sa, Sb, Sc, Sd, Se or Sf constructed according to the Examiner’s interpretation of figure 13b of *Jun* would include a germ. However, the Applicant’s limitation requires that the video region less the germ defines a support. Thus, neither *Jun* nor *Hirata* teach or suggest a support in each of the video regions.

### Filling in the space

Claim 10 also includes the limitation ‘filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ’.

The Examiner directs the Applicant to Figure 13a where in the Fsk box there is a ‘head shot’ (Gc). The Examiner points to background imagery from the head shot

present in the Fsk box as the teaching or suggestion for filling. Consider two alternatives where Ga, Gb, Gc, Gd and Ge are not germs or where Ga, Gb, Gc, Gd and Ge are germs.

Either Ga, Gb, Gc, Gd and Ge are germs and supports, in which case the germs have not been defined as per the ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’ limitation. Alternatively, if Ga, Gb, Gc, Gd and Ge are the germs then the ‘filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ’ limitation cannot be taught or suggested inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space. Thus, neither *Jun* nor *Hirata* teach or suggest a support in each of the video segments.

Since neither *Jun* nor *Hirata* teach or suggest the limitations, they do not teach or suggest all limitations of Claim 10. MPEP 2143.03. As such, Claim 10 was not obvious at the time the invention was made.

Claims 7-9 and 16-18 all directly or indirectly depend from independent Claims 1 and 10, and are therefore believed patentable for at least the same reasons as independent Claims 1 and 10 and because of the additional limitations of these claims.

7. Claims 11 and 19 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Jun*, in view of Li et al., U.S. Patent No. US 7,035,435 (hereinafter *Li*).

## Claim 1

Claim 1 includes the limitation ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’.

At least one of the supports Sa, Sb, Sc, Sd, Se or Sf constructed according to the Examiner’s interpretation of figure 13b of *Jun* would include a germ. However, the Applicant’s limitation requires that the video segment less the germ defines a support. Thus, neither *Jun* nor *Li* teach or suggest a support in each of the video segments.

Claim 1 also includes the limitation ‘filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’.

The Applicant believes there are two mutually exclusive alternatives where Ga, Gb, Gc, Gd and Ge are not germs and where Ga, Gb, Gc, Gd and Ge are germs. If the Examiner means that Ga, Gb, Gc, Gd and Ge are the germs and the support, then *Jun* does not implicitly disclose defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments.

If the Examiner means that Ga, Gb, Gc, Gd and Ge are the germs, then the Applicant respectfully points out that in Figure 13a there is no background imagery that is added back in the Fsk box that meets the limitation ‘at least one pixel value of the

support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated' since only Ga, Gb, Gc, Gd and Ge are present in Fsk.

The Examiner claims that it is 'inherent' that portions of the support are positioned in the space Office Action, October 16, 2008, page 3, line 12 – page 4, line 3. The Applicant respectfully disagrees. "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art ..." MPEP 2112. The 'filling in the space of the canvas' limitation cannot be met inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

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Accordingly, either Gc is a germ and a support, and the germs have not been defined as per the 'defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments' limitation. Alternatively, if Gc is a germ the 'filling in the space of the canvas between the germs, wherein filling in the space of the canvas between the germs includes laying out one or more portions of the supports, wherein the one or more portions of the supports are positioned in the space such that at least one pixel value of

the support relative to the closest germ is positioned corresponding to the position of that pixel value relative to the germ from which it was separated’ limitation cannot be met inherently because in at least the examples shown in Figure 13a, it does not necessarily flow that a support is positioned in the space.

Since neither *Jun* nor *Li* teach or suggest these limitations, they do not teach or suggest all limitations of Claim 1. [MPEP 2143.03](#). As such, Claim 1 was not obvious at the time the invention was made.

## **Claim 10**

### Video Segment less Germ defines Support

Claim 10 includes the limitation ‘determining a germ in each of a plurality of images, the germ containing a region of interest, wherein the video region less the germ defines a support in each of the video regions’.

At least one of the supports *Sa*, *Sb*, *Sc*, *Sd*, *Se* or *Sf* constructed according to the Examiner’s interpretation of figure 13b of *Jun* would include a germ. However, the Applicant’s limitation requires that the video region less the germ defines a support. Thus, neither *Jun* nor *Li* teach or suggest a support in each of the video regions.

### Filling in the space

Claim 10 also includes the limitation ‘filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ’.

The Examiner directs the Applicant to Figure 13a where in the *Fsk* box there is a ‘head shot’ (*Go*). The Examiner points to background imagery from the head shot

present in the Fsk box as the teaching or suggestion for filling. Consider two alternatives where Ga, Gb, Gc, Gd and Ge are not germs or where Ga, Gb, Gc, Gd and Ge are germs.

Either Ga, Gb, Gc, Gd and Ge are germs and supports, in which case the germs have not been defined as per the ‘defining a germ associated with each dominant group in each of the video segments, wherein the video segment less the germ defines a support in each of the video segments’ limitation. Alternatively, if Ga, Gb, Gc, Gd and Ge are the germs then the ‘filling in the space of the canvas between the germs with one or more parts of the support, wherein at least one pixel in the space corresponds to the support pixel from the closest germ’ limitation cannot be taught or suggested inherently because in at least the example shown in Figure 13a, it does not necessarily flow that a support is positioned in the space. Thus, neither *Jun* nor *Li* teach or suggest a support in each of the video segments.

Since neither *Jun* nor *Li* teach or suggest the limitations, they do not teach or suggest all limitations of Claim 10. MPEP 2143.03. As such, Claim 10 was not obvious at the time the invention was made.

Claims 11 and 19 directly depend from independent Claims 10 and 19, and are therefore believed patentable for at least the same reasons as independent Claims 1 and 10 and because of the additional limitations of these claims.

**8.** Claim 21 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Jun*, in view of *Lin*, U.S. Patent No. US 6,307,964 (hereinafter *Lin*).

## **Claim 21**

Claim 21 includes the limitation “using a Voronoi algorithm to determine the shape of the support to be placed on the canvas”. The Examiner argues that *Lin* teaches this limitation. Applicants respectfully disagree. In fact *Lin* teaches a "Voronoi Ordering function", which is a function for ordering a set of points with respect to a closed contour. Column 4, lines 15-42. In particular, that contour is part of the input. In contrast, the Applicants' Voronoi algorithm computes the boundary curves between the germs, so the contours are part of the ‘output’. The purpose of our Voronoi algorithm is to fill in the space between the germs, with respect to a plurality of output shapes. In contrast, *Lin* computes a "shape descriptor", or an abstraction of a single input shape. Georgy Voronoi made significant contributions to mathematics and geometry. His name is attached to many algorithms, functions and operations. However, the ‘Voronoi algorithm’ and the ‘Voronoi Ordering function’ are not the same. Since neither *Jun* nor *Lin* teach or suggest “using a Voronoi algorithm to determine the shape of the support to be placed on the canvas”, they do not teach or suggest all limitations of Claim 21. As such, Claim 21 was not obvious at the time the invention was made.

In addition, Claim 21 directly depends from independent Claim 1, and is therefore believed patentable for at least the same reasons as independent Claim 1.

In view of the above, Applicants respectfully request that the Examiner reconsider and withdraw the 103(a) rejections.

## CONCLUSION

In light of the above, it is respectfully requested that all outstanding rejections be reconsidered and withdrawn. The Examiner is respectfully requested to telephone the undersigned if he can assist in any way in expediting issuance of a patent.

The Commissioner is authorized to charge the required fees and any underpayment of fees or credit any overpayment to Deposit Account No. 06-1325 for any matter in connection with this reply, including any fee for extension of time, which may be required.

Respectfully submitted,

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